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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/005,223	12/07/2001	Jong-Chull Shon	1594.1013	5569

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EXAMINER

HE, AMY

ART UNIT PAPER NUMBER

2858

DATE MAILED: 10/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/005,223

Applicant(s)

SHON ET AL.

Examiner

Amy He

Art Unit

2858

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 15 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Simon et al. (U. S. Patent No. 5, 661, 405).

Referring to claims 1, 15 and 26, Simon discloses a polymer-type humidity sensor (10 in Figures 1-2) comprising:

a polymer structure (20 in Figures 6) of a predetermined shape, having two opposing ends, wherein said polymer structure comprises a rubber and carbon mixed in said rubber (column 2, lines 44-46); and

a pair of electric terminals (54 in Figures 6), each contacting a corresponding one of the opposing ends of said polymer structure.

2. Claims 1, 15 and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Wardell (U. S. Patent No. 4, 532, 469).

Referring to claims 1, 15 and 26, Wardell discloses a polymer-type humidity sensor (in Figure 5) comprising:

a polymer structure (106a and 106b; column 8, lines 13-14) of a predetermined shape, having two opposing ends, wherein said polymer structure comprises a rubber and carbon mixed in said rubber (column 4, lines 60-62); and

a pair of electric terminals (111), each contacting a corresponding one of the opposing ends of said polymer structure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simon al. (U. S. Patent No. 5, 661, 405).

Referring to claims 2-4, Simon discloses the polymer-type humidity sensor as in claim 1. Simon does not specifically disclose that the carbon added to said polymer structure is in a range of 15-20% plus and minus 5% volume; the polymer-type humidity sensor has a resistance in a range of 500 K-2M and an impedance of 2×10^6 ohms and 5×10^5 ohms at a relative humidity range of 0% and 100%. It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Simon to disclose the claimed carbon range and the resistance and impedance range, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F. 2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

4. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wardell (U. S. Patent No. 4, 532, 469).

Referring to claims 2-4, Wardell discloses the polymer-type humidity sensor as in claim 1. Wardell does not specifically disclose the carbon volume, resistance and impedance ranges. It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Wardell to disclose the claimed carbon volume range and the resistance and impedance ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F. 2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

5. Claims 5-14, 16-19 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simon et al. (U. S. Patent No. 5, 661, 405), in view of Tachikawa et al. (U. S. Patent No. 6, 375, 863).

Referring to claims 5 and 16, Simon discloses the polymer-type humidity sensor of claim 1 comprising rubber (column 2, lines 47-48). Simon does not specifically disclose NBR-Acrylonitrile Butadiene as the rubber used. However, the NBR-Acrylonitrile Butadiene rubber is conventional in the art, as evidenced in Tachikawa (column 6, lines 5-8). A person of ordinary skill in the art at the time the invention was made would find it obvious to modify Simon to use the NBR-Acrylonitrile Butadiene rubber, as taught by Tachikawa, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 227 F. 2d 197, 125 USPQ 416 (CCPA 1960).

Referring to claims 6-8 and 17-19, Simon does not disclose the specific ranges of carbon volume, resistance and impedance. However, a person of ordinary skill in the art would find it obvious to further modify Simon to use the claimed ranges of carbon volume, resistance and impedance, for the same reasons as stated above for the rejections of claims 2-4.

Referring to claim 9, Simon further discloses that the electric terminals (54 in Figure 6) are situated within said polymer structure at predetermined locations and extend outward from said polymer structure (see Figures 1-2 and 6).

Referring to claim 10, Simon further discloses that the electric terminals (54 in Figure 6) are situated externally and contact outer portions of said polymer structure (through 58 in Figure 2).

Referring to claims 11-14 and 27-29, Simon discloses that the predetermined shape includes a planar surface (see the planar surface of the electrode ribbon 20 in Figure 6). Simon does not specifically disclose a rounded surface, a cylindrical shape, a coil shape, or a prismatic shape having rectangular cross-section. It would have been obvious to a person of ordinary skill in the art at the time of the invention to further modify Simon to use the claimed shapes, or any other suitable shape as desired, since it has been held that changing the shape of an invention involves only routine skill in the art. *In re Dailey*, 149 USPQ 47 (CCPA 1976).

6. Claims 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U. S. Patent No. 5, 847, 261), in view of Simon (U. S. Patent No. 5, 661, 405).

Referring to claim 20, Lee discloses a microwave oven (10 in Figure 1) to cook food comprising:

- a body including a cooking cavity (300);
- a heating element (100 and 200) to cook the food in the cooking cavity(300);
- an air outlet unit (311, 321 and 331) to discharge air from the cooking cavity;
- a control unit (800) which controls the cooking of the food; and
- a humidity sensor (800) disposed at said air outlet to obtain information on a humidity content of the discharged air for use by said control unit, wherein said polymer-type humidity sensor comprises
 - a pair of electric terminals contacting the humidity sensor.

Lee does not disclose a polymer type humidity sensor comprising a polymer structure having a rubber and carbon.

Simon discloses the polymer type humidity sensor comprising a polymer structure (20 in Figure 6) having rubber and carbon.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Lee to replace the vapor sensor (800) with the humidity sensor using polymer structure comprising rubber and carbon, as taught by Simon, in order to ensure operation of the humidity sensor at high humidity level. Since the ceramic sensing element in Lee does not have sufficiently high stability at high humidity.

Referring to claim 21, Lee further discloses a cooling fan (400 in Figure 1); which draws atmospheric air into the cooking cavity while cooling said heating element.

Referring to claims 22-24, Lee in view of Simon does not disclose the specific ranges of carbon volume, resistance and impedance. However, a person of ordinary skill in the art would find it obvious to further modify Lee to use the claimed ranges of carbon volume, resistance and impedance, for the same reasons as stated above for the rejections of claims 2-4.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (U. S. Patent No. 5, 847, 261) in view of Simon et al. (U. S. Patent No. 5, 661, 405), as applied to claims 20-24 above, and further in view of Tachikawa et al. (U. S. Patent No. 6, 375, 863).

Referring to claim 25, Lee in view of Simon discloses the microwave oven of claim 24, wherein the polymer type humidity sensor comprises rubber. Lee in view of Simon does not specifically disclose NBR-Acrylonitrile Butadiene as the rubber used. However, the NBR-Acrylonitrile Butadiene rubber is conventional in the art, as evidenced in Tachikawa (column 6, lines 5-8). A person of ordinary skill in the art at the time the invention was made would find it obvious to further modify Lee to use the NBR-Acrylonitrile Butadiene rubber, as taught by Tachikawa, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 227 F. 2d 197, 125 USPQ 416 (CCPA 1960).

Response to Arguments


8. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy He whose telephone number is (703) 305-3360. The examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on 703-308-0750. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.


AH
October 10, 2003


N. Le
Supervisory Patent Examiner
Technology Center 2800